

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

## Application Review

**Issue Date:** **TBD**

**Region:** Mooresville Regional Office  
**County:** Rowan  
**NC Facility ID:** 8000163  
**Inspector's Name:** Melinda Wolanin  
**Date of Last Inspection:** 08/15/2017  
**Compliance Code:** 3 / Compliance - inspection

<b>Facility Data</b>  <b>Applicant (Facility's Name):</b> Plant Rowan County  <b>Facility Address:</b> Plant Rowan County 5755 NC 801 Highway Salisbury, NC 28147  <b>SIC:</b> 4911 / Electric Services <b>NAICS:</b> 221112 / Fossil Fuel Electric Power Generation  <b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V				<b>Permit Applicability (this application only)</b>  <b>SIP:</b> 02D: .0503, .0515, .0516, .0521, .0524, .0530, .0530(u), .1109, .1111, .1407 02Q: .0400 <b>NSPS:</b> Dc, GG <b>NESHAP:</b> YYYY, DDDDD, Case-by-Case <b>PSD:</b> PM10, NOx, SO <sub>2</sub> , CO, VOC, sulfuric acid, ammonia, Projected actual emissions <b>PSD Avoidance:</b> n/a <b>NC Toxics:</b> n/a <b>112(r):</b> n/a <b>Other:</b> CSAPR, Acid Rain Permit			
<b>Contact Data</b>				<b>Application Data</b>			
<b>Facility Contact</b>  Shane Short Compliance Team Leader (704) 278-6657 5755 NC Highway 801 Salisbury, NC 28147	<b>Authorized Contact</b>  Chris Lane Plant Manager (704) 278-6601 5755 NC 801 Highway Salisbury, NC 28147	<b>Technical Contact</b>  Scott McMillan SPC Environmental Compliance (205) 992-0057 3535 Colonnade Parkway Birmingham, AL 35243	<b>Application Numbers:</b> 8000163.18A & .18B <b>Date Received:</b> 06/08/2018 <b>Application Type:</b> Renewal <b>Application Schedule:</b> TV-Renewal <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 08758/T20 <b>Existing Permit Issue Date:</b> 04/17/2017 <b>Existing Permit Expiration Date:</b> 03/31/2019				
<b>Total Actual emissions in TONS/YEAR:</b>							
CY	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO	PM <sub>10</sub>	Total HAP	Largest HAP
2016	10.61	247.89	27.78	295.05	95.41	17.13	11.48 [Formaldehyde]
2015	7.69	119.78	17.50	184.87	60.68	10.53	7.27 [Formaldehyde]
2014	9.20	123.26	17.52	182.00	59.93	10.30	7.06 [Formaldehyde]
2013	6.30	109.37	16.72	175.38	58.02	9.99	6.89 [Formaldehyde]
2012	7.21	153.64	20.61	218.41	71.60	12.45	8.58 [Formaldehyde]
<b>Review Engineer:</b> Russell Braswell  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____				<b>Comments / Recommendations:</b> Issue 08758/T21 <b>Permit Issue Date:</b> <b>TBD</b> <b>Permit Expiration Date:</b> <b>TBD+5 years</b>			

## 1. Purpose of Application:

- .18A:

Plant Rowan County ("PRC", "the facility") currently operates an electric generating power plant in Rowan County NC. The facility operates under Title V Air Quality Permit 08758T20, which is set to expire on March 31, 2019. PRC submitted this application in order to renew the Title V permit. Because the renewal application was received at least nine months<sup>1</sup> before the expiration date, the existing permit will remain in effect, regardless of expiration date, until this renewal application is processed. In addition to renewing the permit, PRC requested changes to wording in some specific permit conditions.

Because this application is for renewal, no P.E. seal or zoning consistency form was required.

- .18B:

In addition to the Title V permit, PRC also holds a Title IV Acid Rain permit. That permit is incorporated into the Title V permit. PRC submitted this application in order to renew the Title IV permit without modification. Renewing the Title IV permit at this time will ensure that the expiration dates of the Title IV and V permits are synchronized in the future.

## 2. Facility Description:

This facility is a power plant that operates simple- and combined-cycle combustion turbines manufactured by General Electric. Each turbine can operate on natural gas, and all but Unit 5 can operate on No. 2 fuel oil. Each turbine is equipped with low-NOx burners and water injection. Units 4 and 5 are equipped with selective catalytic reduction (SCR) units.

In addition to the turbines, PRC operates several sources that support the turbines, such as a cooling tower and gas pre-heaters.

## 3. History/Background Since the Previous Permit Renewal:

- April 8, 2014 Permit T16 issued. This action renewed the Title V and Acid Rain Permits. In addition, this action removed two unconstructed turbines and a cooling tower.
- April 24, 2015 Permit T17 issued. This was the first step of a two-step Significant Modification that upgraded the control software used with Units 4 and 5. This, in turn, increased the utilization of these units. PRC submitted this application to demonstrate that this was not a PSD-Major modification.
- March 28, 2016 Permit T18 issued. This was a Reopen-for-Cause modification that removed all references to CAIR and replaced them with CSAPR.
- July 15, 2016 Permit T19 issued. This was the second step of a two-step Significant Modification initiated by the T17 permit.

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<sup>1</sup> The permit renewal deadline is set by 15A NCAC 02Q .0513(b), and previously required nine months. This rule was amended on April 1, 2018, which changed the deadline to six months.

- April 17, 2018 Permit T20 issued. This was a TV-Significant modification that allowed for minor upgrades to Units 4 and 5 without triggering a PSD review. This action also renewed the Acid Rain Permit.

#### 4. Application Chronology:

- June 8, 2018 Applications .18A and .18B received.
- July 9, 2018 Email sent to PRC regarding the completion of the upgrades mentioned in Permit Condition 2.1 B.5. Sam Sharpe (a representative of PRC) responded later that day.
- July 10, 2018 An initial draft of the permit and application review were sent to DAQ staff (Tom Anderson, Mark Cuilla, Samir Parekh, Jennifer Womick, Melinda Wolanin) and PRC staff (Scott McMillian, Sam Sharpe). For a summary of comments received, see Attachment 2.
- July 23 and 31, 2018 Phone calls with Scott McMillian and Sam Sharpe regarding the ammonia injection curve and Mode 6 operation.
- August 3, 2018 A second draft of the permit and application review were sent to DAQ staff and PRC staff. For a summary of comments received, see Attachment 2.
- XXXXX Public / EPA notice
- XXXXX Permit issued.

#### 5. Permit Modifications/Changes and TVEE Discussion:

- The permit now requires the facility to establish an ammonia injection curve in order to determine compliance with NO<sub>x</sub> emission rates during periods of NO<sub>x</sub> CEM downtime. Previously, the permit required ammonia injection at rates equal to the 100% injection rate, which could result in excess ammonia emissions.
- The permit now defines the turbine startup on natural gas to be the period between initial firing and the turbine entering "Mode 6". See Section 7.c.2. for details.

The list of changes to the permit can be found in Attachment 1.

#### 6. Regulatory Overview:

PRC is subject to the following State Implementation Plan (SIP) and Federal regulations, in addition to the requirements in the General Conditions:

- 15A NCAC 02D .0503 "Particulates from Fuel Burning Indirect Heat Exchangers"
- 15A NCAC 02D .0515 "Particulates from Miscellaneous Industrial Processes"
- 15A NCAC 02D .0516 "Sulfur Dioxide Emissions from Combustion Sources"
- 15A NCAC 02D .0521 "Control of Visible Emissions"
- 15A NCAC 02D .0524 "New Source Performance Standards"  
(40 CFR Part 60, Subparts Dc, GG)
- 15A NCAC 02D .0530 "Prevention of Significant Deterioration"

- 15A NCAC 02D .0530(u) "Prevention of Significant Deterioration" (Use of Projected Actual Emissions)
- 15A NCAC 02D .1109 "112(j) Case-by-Case Maximum Achievable Control Technology"
- 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (40 CFR Part 63, Subparts YYYYY, DDDDD)
- 15A NCAC 02Q .0400 "Acid Rain Procedures"
- Cross State Air Pollution Rule (aka CSAPR) (40 CFR Part 97, Subparts AAAAA, BBBB, and CCCCC)

An extensive review for the following applicable regulations is not included in this document: 02D .0503, .0515, .0516, and .0521. The facility's status with respect to these regulations has not changed. The permit will be updated to reflect the most current stipulations for all applicable regulations.

For a review of permit changes and an explanation of rules included (or not included) in the permit, see Section 7, below.

## 7. Rules Review

### a. New Source Performance Standards (NSPS; 40 CFR Part 60)

#### 1. *Subpart Dc "Small Industrial-Commercial-Institutional Steam Generating Units"*

This rule applies to boilers with a heat input rate between 10 and 100 MMBtu/hr and that were constructed after 1989. The boiler ES-6 is the only subject source at this facility.

According to 40 CFR 60.48c(g)(2), the only requirement that applies to small gas-fired boilers is to keep records of fuel use in the subject boiler.

During the most recent inspection, PRC appeared to be in compliance with this rule. Continued compliance will be determined during subsequent inspections.

#### 2. *Subpart GG "Stationary Gas Turbines"*

This rule applies to stationary turbines constructed after October 3, 1977. Each of the turbines at this facility are subject to this rule.

The rule sets emission limits for NO<sub>x</sub> and SO<sub>2</sub>. In general, the facility demonstrates compliance with these limits by operating a continuous emission monitoring system (CEMS) for NO<sub>x</sub> and by using low-sulfur fuel. The facility must keep records of monitoring activities and submit semiannual reports.

During the most recent inspection, PRC appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

#### 3. *Subpart KKKK "Stationary Combustion Turbines"*

This rule applies to stationary turbines constructed and/or modified after February 18, 2005. Each of the turbines at this facility were constructed before this date. None of the turbines have undergone a modification that meets the definition of "modification" or "reconstruction" under 40 CFR Part 60. Therefore, this rule does not apply to any of the turbines at this facility.

b. Maximum Available Control Technology (MACT; 40 CFR Part 63)

This facility is considered a Major Source of hazardous air pollutants. Therefore, rules that apply specifically to Area Sources (e.g. Subpart JJJJJ) do not apply to this facility by default.

1. *Subpart YYYY "Stationary Combustion Turbines"*

This rule applies to all stationary combustion turbines located at HAP-Major facilities. Therefore, each turbine at this facility is subject to this rule.

According to 40 CFR 63.6090(b)(4), existing turbines have no requirements under this rule. The rule defines "existing" as having been constructed before January 14, 2003. All of the turbines at this facility were constructed before that date. None of the turbines have undergone "reconstruction" as defined by 40 CFR Part 63. Therefore, although each turbine is subject to this rule, PRC has no requirements under the rule.

The permit contains a reference to this rule, but no specific condition for the rule.

2. *Subpart DDDDD "Major Sources: Industrial/Commercial/Institutional Boilers and Process Heaters"*

This rule applies to boilers located at HAP-Major sources. Both boilers at this facility are subject to this rule.

This rule defines both boilers as "existing units designed to burn gas 1 fuels". For such units, the requirements are, in general, to operate with good work practices, complete a one-time energy assessment, and perform regular tune-ups of each boiler. The facility must keep records of all monitoring activities and submit semiannual reports.

This facility currently complies with the Case-by-Case MACT for boilers. This facility will continue to comply with that rule until May 19, 2019.

During the most recent inspection, PRC appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

3. *Case-by-Case MACT (CBCM) for Boilers and Process Heaters*

This rule applies to boilers located at HAP-Major sources. Both boilers are subject to this rule.

North Carolina implemented this rule after the initial version of Subpart DDDDD was vacated by court order. Now that a new version of Subpart DDDDD has been promulgated, the CBCM has an expiration date. After the expiration date, the facility will comply with Subpart DDDDD instead.

The requirements of the CBCM are, in general, to operate with good work practices, complete a one-time energy assessment, and perform regular tune-ups of each boiler. The facility must keep records of all monitoring activities and submit semiannual reports. Note that these requirements are very similar to Subpart DDDDD.

The permit contains two separate specific conditions for this rule with the same general requirements. The permit has been modified such that the two conditions are identical. This does not change PRC's requirements under the rule, and is only for clarity.

During the most recent inspection, PRC appeared to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

c. Prevention of Significant Deterioration (PSD)

This facility is a Major Source for PSD purposes, and has undergone a PSD review. In addition to the initial PSD review, this facility has made modifications that did not trigger a new PSD review. In order to demonstrate that no additional PSD review was required, the facility performed the "Projected Actual Emissions" calculations allowed by 15A NCAC .0530(u).

1. *Initial PSD Review*

As a result of the PSD review, the permit includes BACT limits for each turbine and the associated cooling tower.

In addition to the BACT limits, the permit requires:

- Annual operating limits for each turbine;
- Minimize periods of excess emissions during startup/shutdown;
- Operate the NO<sub>x</sub> CEMS required by NSPS Subpart GG;
- Burn only natural gas during the summer ozone season; and
- Operate the SCR for Units 4 and 5

The facility must keep records of all monitoring activities and submit reports twice per year.

PRC appeared to be in compliance with the rule during the most recent inspection. Continued compliance will be determined during subsequent inspections.

2. *Proposed corrections to the PSD permit conditions*

With the renewal application, PRC requested two minor changes to the PSD permit conditions: A) change the ammonia injection requirement during CEM downtime, and B) define startup with natural gas to be based on "Mode 6" instead of 50% capacity.

A) Ammonia injection requirement during periods of NO<sub>x</sub> CEM downtime:

The permit requires that PRC perform emission testing to establish ammonia injection rates for 50, 70, 85, and 100% turbine loads. PRC wants to also establish an injection rate curve for to determine proper injection rates at loads other than the four specified above. This is necessary because the permit also requires that, during periods of NO<sub>x</sub> CEM downtime, the ammonia injection system operate at 100% of the nearest tested emission rate. This means that, for certain loads, the existing permit requires a greater ammonia injection rate than is necessary to comply with the NO<sub>x</sub> BACT limit, which results in a greatly increased ammonia emission rate during that period.

By allowing PRC to establish and operate against an ammonia injection rate curve, PRC is expected to lower ammonia emission rates during NO<sub>x</sub> CEM downtime while still complying with the NO<sub>x</sub> BACT limit.

B) Mode 6 operation:

The existing permit defines "startup" as the period between initial firing and reaching 50% load. PRC suggests that instead of 50%, "Mode 6" should be used as the threshold for exiting startup. Mode 6 is a programmed state set by the manufacturer that indicates conditions are right for the dry low-NOx burners to begin operating. In practice, the turbines enter Mode 6 at approximately 50% load. In the application review for the T08 permit issued to Duke Energy Progress, LLC- Richmond County Combustion Turbine Facility<sup>2</sup>, DAQ determined that replacing the 50% load requirement with Mode 6 would be "substantially equivalent to the 50% load condition and will have the same desired effect in regulating startup and shutdown." The turbines at that facility are the same manufacturer and model number as this facility (General Electric, model 7241FA). Because DAQ has determined that Mode 6 is substantially equivalent to 50% load, changing this requirement in the permit is not expected to have any impact on actual pollutant emissions.

3. *Use of Projected Actual Emissions*

In order to demonstrate that the modifications allowed by the T17 and T20 permits did not require a PSD review, PRC demonstrated that each modification would not result in a significant emission increase as allowed by 02D .0530(u). The projected actual emissions for each of these modifications is included in a specific condition in the permit. PRC must keep records of emissions for five years following the completion of the modifications.

Two changes have been made to these permit conditions. First, the reporting periods have been added to the permit based on the dates PRC implemented the modifications. Second, "Particulates" in Section 2.1 B.4.c has been corrected to "Particulates (front-half)" to match Section 2.1 B.5.c.

d. Risk Management Program and Section 112(r) of the Federal Clean Air Act

This facility does not store any materials above their respective thresholds listed in 40 CFR 68.130. Therefore, this facility does not have any increased requirements under Section 112(r) of the Clean Air Act.

e. Reasonably Available Control Technology (RACT)

This facility is located in Rowan County, which is currently not designated as an area of ozone nonattainment. However, this area has previously been designated as ozone nonattainment, and during that period of time, RACT requirements were added to the permit. As part of the re-designation of Rowan County, NC DAQ agreed to continue to enforce all RACT requirements that had already been added to existing permits. Therefore, this facility will continue to comply with RACT requirements.

The only specific RACT rule that applies to this facility is 02D .1407. The facility's requirements under this rule have not changed, and the facility is expected to continue to comply with the rule.

f. Compliance Assurance Monitoring (CAM; 40 CFR Part 64)

CAM applies to an emission source and associated control device if the following criteria are met:

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2 Issued June 4, 2008, facility ID No. 7700070. At the time that permit was issued, the facility name was "Progress Energy Carolinas Inc. - Richmond City Comb Turbine"

1. The source being controlled is subject to a non-exempt emission standard (defined by 02D .0614(b)(1)),
2. The control device is being used to comply with the emission standard, and
3. The source being controlled has potential emissions of the pollutant subject to the emission standard greater than major source thresholds.

The only control devices used at this facility are the selective catalytic reduction (SCR) systems associated with Units 4 and 5. The SCR units are used to comply with NO<sub>x</sub> emission limits. Because NSPS Subpart GG requires the use of a NO<sub>x</sub> CEMS, the facility has a continuous compliance determination method and is therefore exempt from CAM per 02D .0614(b)(1)(F).

g. Cross State Air Pollution Rule (CSAPR; 40 CFR Part 97, Subparts AAAAA, BBBB, and CCCCC)

This rule applies to power plants that produce electricity for sale.

CSAPR was originally scheduled to take effect on January 1, 2012. This rule was planned as a replacement for the Clean Air Interstate Rules. However, CSAPR was challenged in court and initially vacated by the DC Circuit Court. Legal issues were finally resolved in April 2014, when the US Supreme Court reversed that decision. Because the regulation was delayed by court proceedings, the effective date of the rule was moved to January 1, 2015.

Under this rule, each of the turbines at the facility is considered a "large electric generating unit", per 40 CFR 52.34. This rule and all requirements thereof are considered Federal-enforceable only. Compliance will be determined by the US EPA, not NC DAQ.

h. Acid Rain Permit

This facility is required to obtain and comply with an Acid Rain Permit (ARP) under 40 CFR 72.30 and 31. The ARP limits SO<sub>2</sub> and NO<sub>x</sub> emissions under 40 CFR Parts 73 and 76. The requirements of the ARP are incorporated into NC's SIP under 15A NCAC 02Q .0400.

This rule has no specific emission limits for NO<sub>x</sub> that apply to gas-fired turbines. This rule does not specify allowances for SO<sub>2</sub> for gas-fired turbines.

Ultimately, compliance with the ARP is determined by US EPA, not NC DAQ.

The ARP has been renewed, and the effective date has been synchronized with the Title V permit. In the future, the facility will apply for renewal of the ARP and Title V permit at the same time.

**8. Toxic Air Pollutants (TAPs)**

This facility has not undergone a review of TAP emission rates. This renewal does not trigger a new TAP emission review.

**9. Facility Emissions Review**

For a historical review of actual emissions from the facility, see the summary table on the first page of this review.

## 10. Compliance Status

- Notices of Violation/Recommendation for Enforcement since the previous renewal

None.

- Inspection status

The facility was most recently inspected by Melinda Wolanin on August 15, 2017. PRC appeared to be in compliance with the permit at that time.

## 11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. Virginia is an affected state, and Forsyth county is an affected local program.

The Public Notice and EPA Review periods began on XXXXXXXXXX.

## 12. Recommendations

Issue Permit 08758T21.

Attachment 1 to review of applications 8000163.18A & .18B  
Plant Rowan County

**Change List**

Insert change list from final permit

DRAFT

Attachment 2 to review of applications 8000163.18A & .18B  
Plant Rowan County

**Comments Received on Initial Drafts**

- Mark Cuilla, by email on July 18 and August 6, 2018

1. Why do the conditions for NSPS GG require semiannual reporting on top of the quarterly reports?

*Response: After reviewing these conditions, I do not think this extra reporting is warranted by the rule.*

2. Mark pointed out several typos in the draft permit and review.

*Response: I have fixed the indicated issues.*

3. At the time the existing permit was issued, the renewal application was required nine months before the expiration date. The draft application review only mentions six.

*Response: I have clarified that the current rules require six months, but previously required nine.*

- Sam Sharpe and Scott McMillian, by email and phone on July 23, 2018

1. The renewed permit should address the ammonia injection curve and Mode 6 operation requests.

*Response: After additional discussions on July 31, I have implemented these changes.*

2. Sam pointed out several typos in the draft permit and review.

*Response: I have fixed the indicated issues.*

- Jim Hafner, by email and phone on August 14, 2018

1. The permit requires additional VE monitoring for the turbines that fire fuel oil for more than 1,100 hours. In many cases, DAQ requires a Method 9 test for these sources, but not this permit. We should change this permit to specifically require a Method 9 test after 1,100 hours of operation on oil.

*Response: I have declined to make this change. Based on our current guidelines for combustion sources firing No. 2 fuel oil, DAQ is actually requiring no monitoring at all for VE. Therefore, I don't see the need to make this requirement more stringent.*

2. Jim pointed out typos in the draft permit.

*Response: I have fixed the indicated issues.*

3. The table in Section 2.1 B.4.c includes an entry for "Particulates", which is lower than PM10 and PM2.5. The permit should clarify what "Particulates" means in this context.

*Response: Based on a review of the initial application, I believe that this change is appropriate. I have made this change.*